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REMARKS

Status of the claims

Claims 1-9, 11, 13, 15-20 and 22-24 are pending in the application. Claims 1-9, 11, 13, 15-20 and 22-24 stand rejected. Claims 1 and 6 are amended. Claim 3 is canceled. No new matter has been added.

Amendment to the claims

Claim 1 is amended to incorporate the limitations of claim 3, wherein the susceptor is a liposome or support lattice encapsulating a metal, an ion, or a mixture of ions. The use of a metal susceptor has been deleted. This amendment is intended to overcome the 35 U.S.C. §103 rejection. Claim 6 is amended to further disclose surgical fasteners which comprise a fusion composition. These amendments are explicitly supported by the specification (pg. 23, ll. 14-17 & pg. 25, ll. 7-8; pg. 36, ll. 15-23; pg. 67, ll. 22 to pg. 68, ll. 1-4).

The 35 U.S.C. §103 rejection

Claims 1-9, 13, 15-20 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (US Patent 4,889,120) in view of **Sawyer** (US Patent 5,824,015) in further view of **Hedge** et al. (US Patent 6,656,174). The Applicants respectfully traverse this rejection.

In rejecting independent claim 1, the Examiner states that **Gordon** discloses a method of treatment for tissue substrates in an individual comprising the steps of securing a tissue substrate proximal to a ferromagnetic metal susceptor, applying radiofrequency energy that generates a magnetic field to the substrate or susceptor to generate heat, and affixing the substrate together with the heat. The Examiner concedes that **Gordon** fails to

explicitly recite controlling the affixing of the substrates via feedback monitoring of a property of the substrate, the energy or a combination thereof, wherein the property is heat, an electrical property, eddy currents, conductivity, or frequency changes or a combination thereof.

The Examiner asserts that it is well known in the art that the connection of different portions of biological tissue can be effected by crosslinking of collagen and heated by various means. The Examiner also states that **Sawyer** discloses a method for welding biological tissue and teaches temperature range of 45°C to 75°C in order to form tissue welds/seals. The Examiner further states that **Hedge** et al. disclose a device featuring interior temperature sensors and method for heating treating biological tissue with RF energy.

The Examiner concludes that it would have been obvious to a person of ordinary skill in the art to modify the invention of **Gordon** as taught by **Sawyer** to provide heating temperature range for the treated tissue site in order to achieve a collagen crosslinked tissue seal/weld and as further taught by **Hedge** et al, to provide the system with temperature sensor and temperature-feedback control in order to obtain and maintain a particular tissue treatment site temperature. The Applicants respectfully disagree.

The Applicants have amended claim 1 to incorporate the limitations of claim 3, except for the use of metal susceptors. None of the cited references teach or suggest the use of a liposome or support lattice encapsulating a metal, an ion, or a mixture of ions. **Gordon**, in particular, recites the use of metal particles but is silent regarding all other claimed embodiments. Furthermore, a person of ordinary skill in the art would not find the use of a liposome or support lattice encapsulating a metal, an ion, or a mixture of ions obvious based on the teachings of the cited prior art. For example, a support lattice and liposomes provide the additional benefits of minimizing immune responses or toxic

reactions to the conductor, inducing a desirable pharmacologic event, could enhance the inductive coupling to the activating magnetic field (pg. 34 ll. 20-28), could buttress a wound and could provide a dressing. Liposomes or a support lattice also may be utilized by functionalization of the exposed lattice by various molecules which may enhance the fusion of the substrates. Furthermore, these functionalizations can promote aggregation of liposomes which may be fused together to form multi-laminate or mutivescicular materials. Such materials are useful for drug delivery agents and/or carriers (pg. 51, line 27 to pg. 52, line 3).

The invention describes methods for inductively heating non-conventional substrates, i.e. biological materials, whereas conventional inductive heating typically is used for heating solid materials such as metals or plastics. The use of ionic species or a mixture of ions as susceptor in these biological materials is non-obvious because these are non-conventional substrates, and the use of ionic species as susceptor further requires that the substrate be a liquid or semi-solid medium in order to conduct the eddy currents which form in response to the alternating magnetic field, ultimately resulting in dielectric heating. On the other hand, conventional inductive heating applications involve heating based on hysteresis arising through the implementation of susceptor materials of high magnetic permeability used with solid substrates. In the case where the susceptor is an ion or mixture of ions, it is an absolute requirement that the medium be somewhat fluidic or dissociation of ions will not occur, and eddy currents will be impeded (p. 44, 13-21). This impedance is also detectable as a change in conductivity and may be monitored as an indication of the extent or progress of the reaction (p. 46, ll. 3-11). The use of ionic species as the susceptor is also non-obvious because it provides the benefit of efficient heating by modulating the ionic conductivity between materials as a function of concentration which results in dielectric heating in the fusion composition (pg. 36, ll. 15-23).

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In distinct contrast, the use of metal particles alone do not provide the non-obvious advantages described herein. The prior art does not suggest or teach the use of support lattice encapsulated metals, or ionic species. For these reasons, the Applicants submit that claim 1 is not obvious.

In view of the arguments presented herein, the Applicants respectfully request that the rejection of independent claims 1-9, 11, 13, 15-20, and 22 under 35 U.S.C. §103 be removed.

Claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (US Patent 4,889,120) in view of **Sawyer** (US Patent 5,824,015) in further view of **Hedge** et al. (US Patent 6,656,174) and in view of **Aida** et al. (US Patent 5,897,495). The Applicants respectfully traverse this rejection.

In rejecting claim 11, the Examiner states that Gordon in view of **Sawyer** and further in view of **Hedge** *et al.* disclose the claimed invention except for explicitly reciting the radio frequency energy being applied in pulses. The Examiner contends that it is well known in the art that radiofrequency may be applied in a continuous duration or in discreet pulses. The Examiner further states that **Aida** *et al.* disclose a system and method of heat-treating tissue and teach a transmitter coil for transmitting RF pulses. Thus, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify the invention of **Gordon** in view of **Sawyer** and further in view of **Hedge** *et al.*, as taught by **Aida** *et al.*, to provide RF energy in pulses in order to heat-treat tissue.

For the reasons stated above, the amended independent claim 1 is not rendered obvious by **Gordon**, **Sawyer** and **Hedge** et al. **Aida** et al. do not remedy the deficiency of **Gordon**, **Sawyer** and **Hedge** et al., namely the lack of teaching or suggesting of the

currently recited susceptor embodiments. As a result, dependent claim 11 is also nonobvious over the combination of **Gordon**, **Sawyer**, **Hedge** et al. and **Aida** et al.

In view of the arguments presented, the Applicants respectfully request that the rejection of claim 11 under 35 U.S.C. §103 be removed.

Claims 23 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (US Patent 4,889,120) in view of **Sawyer** (US Patent 5,824,015) and in further view of **Hedge** et al. (US Patent 6,656,174) and still in further view of **Eggers** et al. (US Patent 5,366,443). The Applicants respectfully traverse this rejection.

The Examiner states that the combination of **Gordon**, **Sawyer** and **Hedge** et al. disclose the claimed invention except for heat is monitored via infrared optical detection. The Examiner asserts that it is well known in the art to provide room temperature sensors in various alternate/equivalent means. **Eggers** et al. is applied to teach that temperature sensing may be achieved using fiber optics with infrared sensing technique, a thermocouple, a thermistor, or other means. The Examiner concludes that it would have been obvious to a person of ordinary skill in the art to modify the invention of **Gordon** in view of **Sawyer** in further view of **Hedge** et al., as taught by **Eggers** et al, to provide the device and system with fiber optics with infrared sensing technique in order to provide specific example of temperature sensing means.

As discussed above, **Gordon**, **Sawyer** and **Hedge** et al. do not disclose the invention recited in claim 1 which claims 23 and 24 depend on. **Eggers** et al. do not remedy the deficiencies of **Gordon**, **Sawyer** and **Hedge** et al., namely the lack of teaching or suggesting of the currently recited susceptor embodiments. As a result, dependent claims 23 and 24 are also nonobvious over the combination of **Gordon**, **Sawyer**, **Hedge** et al. and **Eggers** et al.

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In view of the arguments presented, the Applicants respectfully request that the rejection of claim 23 and 24 under 35 U.S.C. §103 be removed. The Applicants submit that all pending claims are now in condition for allowance.

This is intended to be a complete response to the Office Action, mailed May 26, 2010. If any issues remain outstanding, the Examiner is respectfully requested to telephone the undersigned attorney of record for immediate resolution. Applicants believe no fees are due. If this is in error, please debit any applicable fees from Deposit Account No. 07-1185, upon which the undersigned is allowed to draw.

Respectfully submitted,

DRAFT FOR DISCUSSION PURPOSES WITH EXAMINER ONLY

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